Name:

at1118paper: Complete the Square (v404)

Example

By completing the square, find both solutions to the given equation:

$$x^2 - 36x = -308$$

Add $\left(\frac{-36}{2}\right)^2$, which equals 324, to both sides of the equation.

$$x^2 - 36x + 324 = 16$$

Factor the left side.

$$(x - 18)^2 = 16$$

Undo the squaring. We need to consider both $\pm\sqrt{16}$.

$$x - 18 = -4 \quad \text{or} \quad x - 18 = 4$$
$$x = 14 \quad \text{or} \quad x = 22$$

Question 1

By completing the square, find both solutions to the given equation:

$$x^2 + 20x = 429$$

Question 2

By completing the square, find both solutions to the given equation:

$$x^2 - 24x = 585$$

Question 3

By completing the square, find both solutions to the given equation:

$$x^2 + 48x \;=\; 1825$$

Question 4

By completing the square, find both solutions to the given equation:

$$x^2 - 56x \;=\; 177$$

Question 5

By completing the square, find both solutions to the given equation:

$$x^2 - 22x \;=\; 104$$

Question 6

By completing the square, find both solutions to the given equation:

$$x^2 + 14x \;=\; 1107$$